UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P O Box 1450
Alexandria, Virginia 22313-1450
www uspto gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,308	06/23/2006	Harue Nakashima	0756-7725	8956

31780 7590 07/23/2009
ERIC ROBINSON
PMB 955
21010 SOUTHBANK ST.
POTOMAC FALLS, VA 20165

EXAMINER	
YANG, JAY	

ART UNIT	PAPER NUMBER
4132	

MAIL DATE	DELIVERY MODE
07/23/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/584,308	NAKASHIMA ET AL.	
	Examiner	Art Unit	
	JACK YANG	4132	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-27_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-27_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _23 June 2006_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

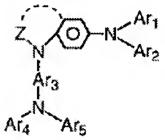
Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

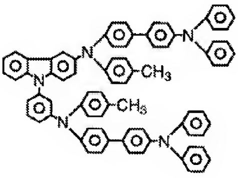
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahora et al. (JP 10310574 A) in view of Aoki et al. (US 2001/0022497 A1) and Matsumoto et al. (US 2005/0098207 A1).

Kitahora et al. discloses a light-emitting element comprising an anode, hole-transporting layer, light-emitting layer, electron-transporting layer, and a cathode ([0078]). Kitahora et al. discloses an oxadiazole compound (that has electron-donating properties) to be in the electron-transporting layer and aluminum tris oxine as the light-emitting substance in the light-emitting layer ([0133]). Kitahora et al. discloses that such light-emitting elements are applicable to various kinds of display devices ([0105]). Kitahora et al. discloses an amino compound represented by the following general formula to be in the hole-transporting layer ([0078]):



((I), page 2), where one such example compound is disclosed:



((19), page 7) such that R^1 = aryl group having 25 carbon atoms (substituted phenyl group), R^2 = hydrogen, Ar^1 = aryl group having 7 carbon atoms (substituted phenyl group), Ar^2 = Ar^3 = aryl group having 6 carbon atoms, and X = bivalent aromatic hydrocarbon group having 12 carbon atoms (biphenyl group). Kitahora et al. discloses the hole-injecting properties of such carbazole derivatives ([0136]). However, Kitahora et al. does not disclose an inorganic compound to be in the hole-transporting/injecting layer with the carbazole derivative nor a fourth layer that contains the carbazole derivative and an inorganic compound.

Aoki et al. discloses the use of vanadium oxide can be used to improve hole-injecting properties of a hole-injecting layer in an organic EL device ([0095]). It would have been obvious to one of ordinary skill in the art at the time of the invention to add vanadium oxide as disclosed by Aoki et al. to the hole-transporting/injecting layer of the light-emitting element that contains the carbazole derivative as disclosed by Kitahora et al. The motivation would be that the vanadium oxide will improve light emission properties and efficiencies due to its ability to improve hole injection into the light-emitting layer.

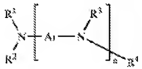
Matsumoto et al. discloses a charge-generating layer (16) to be directly adjacent to the cathode (Fig. 1). Matsumoto et al. discloses the composition of the charge-generating layer: an electron-donating (hole-transporting) compound such as an arylamine compound and vanadium oxide ([0158]). The arylamine compound is represented by the following formula:

([0159]) where Ar_1, Ar_2, and Ar_3 each independently represents an aromatic hydrocarbon group which may have substituents. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate this charge-generating layer adjacent to the cathode as disclosed by Matsumoto et al. to the light-emitting element as disclosed by Kitahora et al in view of Aoki et al. The motivation would be that such a layer would increase light emission properties and efficiencies due to its ability to inject holes and electrons into the cathode and anode, respectively. In addition, it would be further obvious to substitute the carbazole derivative as disclosed by Kitahora et al. for the arylamine compound as disclosed by Matsumoto et al. in the charge-generating layer. The motivation would be that the carbazole derivative is also an arylamine compound that has high electron-donating (hole-transporting) properties.

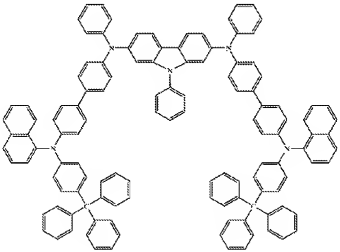
3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahora et al. (JP 10310574 A) in view of Aoki et al. (US 2001/0022497 A1), Matsumoto et al. (US 2005/0098207 A1), and Richter et al. (US 2005/0067951 A1).

Kitahora et al. in view of Aoki et al. and Matsumoto et al. discloses the light-emitting element according to any one of Claims 1-3 as shown above in the 35 U.S.C. 103(a) rejection. However, Kitahora et al. in view of Aoki et al. and Matsumoto et al. does not disclose a carbazole derivative where R^2 has a structure of general formula (2) in which Ar^1, Ar^2, and X have the same substituents as Ar^4, Ar^5, and Y, respectively.

Richter et al. discloses triarylamine derivatives that can serve as hole-transporting materials represented by the following general formula:



(abstract). Richter et al. discloses the following carbazole derivative:

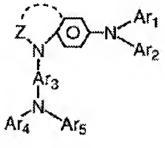


(23, page 9) that has symmetric amino substitution. It would have been obvious to one of ordinary skill in the art at the time of the invention to likewise modify the carbazole derivative as disclosed by Kitahora et al. such that R^2 = formula (2) such that $Ar^1 = Ar^4$, $Ar^2 = Ar^5$, $Ar^3 = Ar^6$, and X = Y. The motivation would be that such symmetric amino

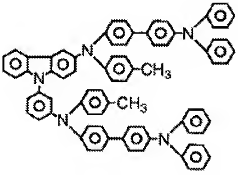
substitution on a hole-transporting carbazole derivative is known as disclosed by Richter et al. In addition, further motivation is provided by the fact that additional amino substitution would provide enhanced hole-transporting properties to the carbazole derivative.

3. Claims 7-11 and 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahora et al. (JP 10310574 A) in view of Aoki et al. (US 2001/0022497 A1), Matsumoto et al. (US 2005/0098207 A1), and Kanamaru et al. (JP 2000056491 A).

Kitahora et al. discloses a light-emitting element comprising an anode, hole-transporting layer, light-emitting layer, electron-transporting layer, and a cathode ([0078]). Kitahora et al. discloses an oxadiazole compound (that has electron-donating properties) to be in the electron-transporting layer and aluminum tris oxine as the light-emitting substance in the light-emitting layer ([0133]). Kitahora et al. discloses an amino compound represented by the following general formula to be in the hole-transporting layer ([0078]):

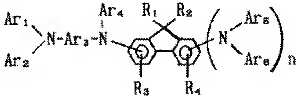


((I), page 2), where one such example compound is disclosed:

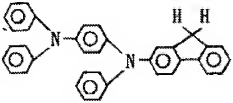


((19), page 7). Kitahora et al. discloses the hole-injecting properties of such carbazole derivatives ([0136]). However, Kitahora et al. does not disclose an inorganic compound to be in the hole-transporting/injecting layer with the carbazole derivative, a fourth layer that contains the carbazole derivative and an inorganic compound, nor a carbazole derivative that meets the limitations of formula (3).

Kanamaru et al. discloses the following fluorene derivative capable of hole-transport represented by:

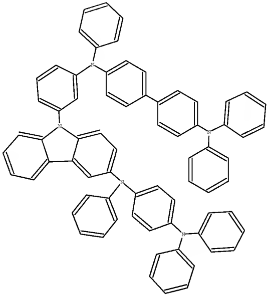


(formula (1), page 2). Kanamaru et al. discloses a particular example:



(Table 1, page 4) where the amino substituent satisfies structural formula (6). It would have been obvious to one of ordinary skill in the art at the time of the invention to

substitute the amino substituent of the fluorene as disclosed by Kanamaru et al. for the amino substituent as disclosed by Kitahora et al. to produce:



such that Ar^1 = aryl group having 6 carbon atoms (phenyl), R^1 = aryl group having 25 carbon atoms (substituted phenyl group), and R^2 = hydrogen. The motivation would be that the substitution of an amino compound represented by formula (6) to a hole-transporting compound (such as fluorene) is known as disclosed by Kanamaru et al. In addition, further motivation would be provided by the fact that aryl amines would provide an enhancement of the hole-transporting properties of the compound.

Aoki et al. discloses the use of vanadium oxide can be used to improve hole-injecting properties of a hole-injecting layer in an organic EL device ([0095]). It would have been obvious to one of ordinary skill in the art at the time of the invention to add vanadium oxide as disclosed by Aoki et al. to the hole-transporting/injecting layer of the light-emitting element that contains the carbazole derivative as disclosed by Kitahora et al. in view of Kanamaru et al. The motivation would be that the vanadium oxide will

improve light emission properties and efficiencies due to its ability to improve hole injection into the light-emitting layer.

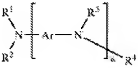
Matsumoto et al. discloses a charge-generating layer (16) to be directly adjacent to the cathode (Fig. 1). Matsumoto et al. discloses the composition of the charge-generating layer: an electron-donating (hole-transporting) compound such as an arylamine compound and vanadium oxide ([0158]). The arylamine compound is represented by the following formula:

([0159]) where Ar_1, Ar_2, and Ar_3 each independently represents an aromatic hydrocarbon group which may have substituents. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate this charge-generating layer adjacent to the cathode as disclosed by Matsumoto et al. to the light-emitting element as disclosed by Kitahora et al. in view of Kanamaru et al. and Aoki et al. The motivation would be that such a layer would increase light emission properties and efficiencies due to its ability to inject holes and electrons into the cathode and anode, respectively. In addition, it would be further obvious to substitute the carbazole derivative as disclosed by Kitahora et al. in view of Kanamaru et al. for the arylamine compound as disclosed by Matsumoto et al. in the charge-generating layer. The motivation would be that the carbazole derivative is also an arylamine compound that has high electron-donating (hole-transporting) properties.

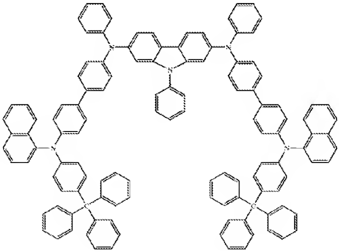
4. Claims 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahora et al. (JP 10310574 A) in view of Aoki et al. (US 2001/0022497 A1), Matsumoto et al. (US 2005/0098207 A1), Kanamaru et al. (JP 2000056491 A), and Richter et al. (US 2005/0067951 A1).

Kitahora et al. in view of Aoki et al., Matsumoto et al., and Kanamaru et al. disclose the light-emitting element to any one of Claims 7-9 or 13-15 as shown above in the 35 U.S.C. 103(a) rejection. However, Kitahora et al. in view of Aoki et al., Matsumoto et al., and Kanamaru et al. does not disclose a carbazole derivative where R^2 has a structure of general formula (4) with $Ar^1 = Ar^2$.

Richter et al. discloses triarylamine derivatives that can serve as hole-transporting materials represented by the following general formula:



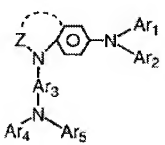
(abstract). Richter et al. discloses the following carbazole derivative:



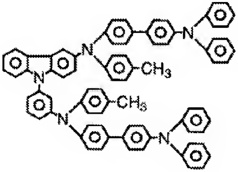
(23, page 9) that has symmetric amino substitution. It would have been obvious to one of ordinary skill in the art at the time of the invention to likewise modify the carbazole derivative as disclosed by Kitahora et al. in view of Kanamaru et al. such that R^2 = formula (4) with Ar^1 = Ar^2 = phenyl = formula (6). The motivation would be that such symmetric amino substitution on a hole-transporting carbazole derivative is known as disclosed by Richter et al. In addition, further motivation is provided by the fact that additional amino substitution would provide enhanced hole-transporting properties to the carbazole derivative.

5. Claims 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahora et al. (JP 10310574 A) in view of Aoki et al. (US 2001/0022497 A1), Matsumoto et al. (US 2005/0098207 A1), and Kawamura et al. (US 541,129 B1).

Kitahora et al. discloses a light-emitting element comprising an anode, hole-transporting layer, light-emitting layer, electron-transporting layer, and a cathode ([0078]). Kitahora et al. discloses an oxadiazole compound (that has electron-donating properties) to be in the electron-transporting layer and aluminum tris oxine as the light-emitting substance in the light-emitting layer ([0133]). Kitahora et al. discloses an amino compound represented by the following general formula to be in the hole-transporting layer ([0078]):

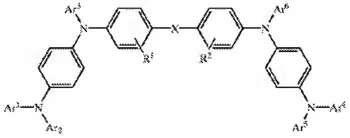


((I), page 2), where one such example compound is disclosed:

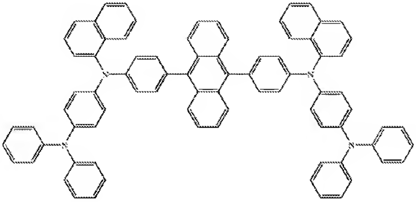


((19), page 7). Kitahora et al. discloses the hole-injecting properties of such carbazole derivatives ([0136]). However, Kitahora et al. does not disclose an inorganic compound to be in the hole-transporting/injecting layer with the carbazole derivative, a fourth layer that contains the carbazole derivative and an inorganic compound, nor a carbazole derivative that meets the limitations of formula (103).

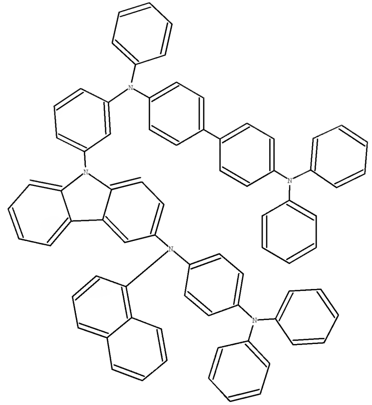
Kawamura et al. discloses the following compound capable of hole-transport represented by:



(General formula (1), col. 2). Kawamura et al. discloses a particular example:



(PD-02, col. 7) where the amino substituent attached to the anthracene derivative satisfies structural formula (104). It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the amino substituent of the anthracene derivative as disclosed by Kawamura et al. for the amino substituent as disclosed by Kitahora et al. to produce:



such that R^1 = aryl group having 25 carbon atoms (substituted phenyl group), and R^2 = hydrogen. The motivation would be that the substitution of an amino compound represented by formula (104) produces a compound having a small ionization potential and a large hole mobility, and when used in a light-emitting element, it can provide long lifetimes and decreased driving voltages (col. 1, lines 62-67).

Aoki et al. discloses the use of vanadium oxide can be used to improve hole-injecting properties of a hole-injecting layer in an organic EL device ([0095]). It would have been obvious to one of ordinary skill in the art at the time of the invention to add vanadium oxide as disclosed by Aoki et al. to the hole-transporting/injecting layer of the light-emitting element that contains the carbazole derivative as disclosed by Kitahora et al. in view of Kawamura et al. The motivation would be that the vanadium oxide will

improve light emission properties and efficiencies due to its ability to improve hole injection into the light-emitting layer.

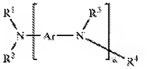
Matsumoto et al. discloses a charge-generating layer (16) to be directly adjacent to the cathode (Fig. 1). Matsumoto et al. discloses the composition of the charge-generating layer: an electron-donating (hole-transporting) compound such as an arylamine compound and vanadium oxide ([0158]). The arylamine compound is represented by the following formula:

([0159]) where Ar_1, Ar_2, and Ar_3 each independently represents an aromatic hydrocarbon group which may have substituents. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate this charge-generating layer adjacent to the cathode as disclosed by Matsumoto et al. to the light-emitting element as disclosed by Kitahora et al. in view of Kawamura et al. and Aoki et al. The motivation would be that such a layer would increase light emission properties and efficiencies due to its ability to inject holes and electrons into the cathode and anode, respectively. In addition, it would be further obvious to substitute the carbazole derivative as disclosed by Kitahora et al. in view of Kawamura et al. for the arylamine compound as disclosed by Matsumoto et al. in the charge-generating layer. The motivation would be that the carbazole derivative is also an arylamine compound that has high electron-donating (hole-transporting) properties.

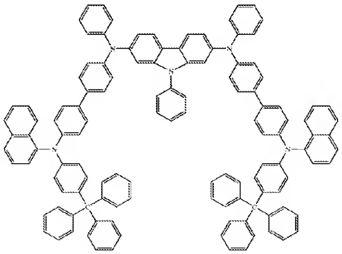
6. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahora et al. (JP 10310574 A) in view of Aoki et al. (US 2001/0022497 A1), Matsumoto et al. (US 2005/0098207 A1), Kawamura et al. (US 541,129 B1), and Richter et al. (US 2005/0067951 A1).

Kitahora et al. in view of Aoki et al., Matsumoto et al., and Kawamura et al. disclose the light-emitting element to any one of Claims 19-21 as shown above in the 35 U.S.C. 103(a) rejection. However, Kitahora et al. in view of Aoki et al., Matsumoto et al., and Kawamura et al. does not disclose a carbazole derivative where R^2 has a structure of general formula (104).

Richter et al. discloses triarylamine derivatives that can serve as hole-transporting materials represented by the following general formula:



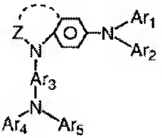
(abstract). Richter et al. discloses the following carbazole derivative:



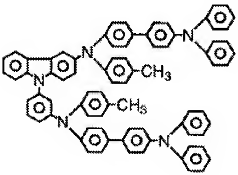
(23, page 9) that has symmetric amino substitution. It would have been obvious to one of ordinary skill in the art at the time of the invention to likewise modify the carbazole derivative as disclosed by Kitahora et al. in view of Kawamura et al. such that R^2 = formula (104). The motivation would be that such symmetric amino substitution on a hole-transporting carbazole derivative is known as disclosed by Richter et al. In addition, further motivation is provided by the fact that additional amino substitution would provide enhanced hole-transporting properties to the carbazole derivative.

7. Claims 7-11, 13-17, and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahora et al. (JP 10310574 A) in view of Aoki et al. (US 2001/0022497 A1), Matsumoto et al. (US 2005/0098207 A1), and Ly (US 2004/0185299 A1).

Kitahora et al. discloses a light-emitting element comprising an anode, hole-transporting layer, light-emitting layer, electron-transporting layer, and a cathode ([0078]). Kitahora et al. discloses an oxadiazole compound (that has electron-donating properties) to be in the electron-transporting layer and aluminum tris oxine as the light-emitting substance in the light-emitting layer ([0133]). Kitahora et al. discloses an amino compound represented by the following general formula to be in the hole-transporting layer ([0078]):

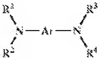


((I), page 2), where one such example compound is disclosed:

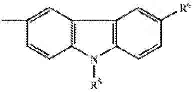


((19), page 7). Kitahora et al. discloses the hole-injecting properties of such carbazole derivatives ([0136]). However, Kitahora et al. does not disclose an inorganic compound to be in the hole-transporting/injecting layer with the carbazole derivative, a fourth layer that contains the carbazole derivative and an inorganic compound, nor a carbazole derivative that meets the limitations of formulas (3), (5), and (103).

Ly discloses the following compound that can be used as material for the light-emitting layer, hole-injecting layer, or the hole-transporting layer of a light-emitting element:



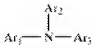
((I), abstract) where Ar = phenyl ([0009]), R^2 =



([0021]) with R^5 = hydrogen ([0021]) and R^6 = hydrogen ([0022]), R^1 = phenyl or naphthyl ([0017]), R^3 = R^4 = phenyl ([0017], [0023], [0024]) such that for formula (3) Ar^1 = aryl group having 6 or 10 carbon atoms (phenyl or naphthyl, respectively) and R^2 = hydrogen. It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the carbazole derivatives as disclosed by Ly for the carbazole derivative as disclosed by Kitahora et al. The motivation would be that the carbazole derivatives as disclosed by Ly also has hole-transporting abilities, in addition to having good hole-injecting and emitting properties that are able to perform at relatively high temperatures ([0007]).

Aoki et al. discloses the use of vanadium oxide can be used to improve hole-injecting properties of a hole-injecting layer in an organic EL device ([0095]). It would have been obvious to one of ordinary skill in the art at the time of the invention to add vanadium oxide as disclosed by Aoki et al. to the hole-transporting/injecting layer of the light-emitting element that contains the carbazole derivative as disclosed by Kitahora et al. in view of Ly. The motivation would be that the vanadium oxide will improve light emission properties and efficiencies due to its ability to improve hole injection into the light-emitting layer.

Matsumoto et al. discloses a charge-generating layer (16) to be directly adjacent to the cathode (Fig. 1). Matsumoto et al. discloses the composition of the charge-generating layer: an electron-donating (hole-transporting) compound such as an arylamine compound and vanadium oxide ([0158]). The arylamine compound is represented by the following formula:



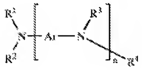
([0159]) where Ar_1, Ar_2, and Ar_3 each independently represents an aromatic hydrocarbon group which may have substituents. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate this charge-generating layer adjacent to the cathode as disclosed by Matsumoto et al. to the light-emitting element as disclosed by Kitahora et al. in view of Ly and Aoki et al. The motivation would be that such a layer would increase light emission properties and efficiencies due to its ability to inject holes and electrons into the cathode and anode, respectively. In addition, it would be further obvious to substitute the carbazole derivative as disclosed by Ly for the arylamine compound as disclosed by Matsumoto et al. in the charge-generating layer. The motivation would be that the carbazole derivative is also an arylamine compound that has good hole-transporting abilities, in addition to having good hole-injecting and emitting properties that are able to perform at relatively high temperatures ([0007]).

8. <u>Claims 12, 18, and 24</u> are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahora et al. (JP 10310574 A) in view of Aoki et al. (US 2001/0022497 A1), Matsumoto et al. (US 2005/0098207 A1), Ly (US 541,129 B1), and Richter et al. (US 2005/0067951 A1).

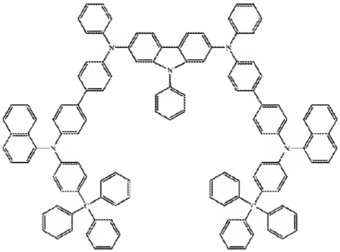
Kitahora et al. in view of Aoki et al., Matsumoto et al., and Ly disclose the light-emitting element to any one of Claims 7-9, 13-15, and 19-21 as shown above in the 35 U.S.C. 103(a) rejection. However, Kitahora et al. in view of Aoki et al., Matsumoto et

al., and Ly does not disclose a carbazole derivative where R^2 has a structure of general formula (104).

Richter et al. discloses triarylamine derivatives that can serve as hole-transporting materials represented by the following general formula:



(abstract). Richter et al. discloses the following carbazole derivative:



(23, page 9) that has symmetric amino substitution. It would have been obvious to one of ordinary skill in the art at the time of the invention to likewise modify the carbazole derivative as disclosed by Ly such that R^2 = formula (104). The motivation would be that such symmetric amino substitution on a hole-transporting carbazole derivative is known as disclosed by Richter et al. In addition, further motivation is provided by the fact that additional amino substitution would provide enhanced hole-transporting properties to the carbazole derivative.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JACK YANG whose telephone number is (571)270-1137. The examiner can normally be reached on Monday to Thursday from 8:30 am to 6:00 pm Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike LaVilla can be reached on 571-272-1539. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. Y./
Examiner, Art Unit 4132

/Milton I. Cano/
Supervisory Patent Examiner, Art Unit 4132